



Trimble SX10

SCANNING TOTAL STATION

IT'S A REVOLUTION. IN ONE STATION.

The Trimble® SX10 scanning total station redefines the capabilities of everyday survey equipment by providing the world's most innovative solution for surveying, engineering, and scanning professionals. The Trimble SX10 will change the way you work. This new, versatile solution is capable of collecting any combination of high-density 3D scan data, enhanced Trimble VISION™ imaging, and high-accuracy total station data, allowing you to capture exactly what you need, saving you time and money on every job.

Trimble's new Lightning 3DM enables the SX10 to capture both high-accuracy total station measurements and true high-speed 3D scans together in a single instrument providing a higher level of measurement performance than ever before. The system has been designed from the ground up leveraging trusted technologies like MagDrive™ and SurePoint™. Combining these with new technologies like advanced Autolock® allow the SX10 to deliver maximum accuracy, efficiency and detail. The complete integration of the SX10 with Trimble Access™ and Trimble Business Center software enable familiar and efficient survey workflows to get your crews up and running fast.

3D Scanning That's Superior in Every Way.

The Trimble SX10 measures dense 3D scan data at up to 26,600 Hz with high precision over the full measurement range of up to 600 m. With the Trimble SX10, point cloud data is captured and then automatically registered with your survey workflow. Whether you're capturing full dome scans from your station setup or simply augmenting your survey data with scans of specific areas of interest, be confident that all of the information you gather will drop right into your survey coordinate system.

VISION That's Even Better Than Ever.

The unique implementation of Trimble VISION technology onboard the Trimble SX10 gives you more power than ever to direct your survey with live video images on the controller as well as create a wide variety of deliverables from collected imagery. From the very beginning, you'll find it gives users in any setting a new, higher level of performance, including the ability to capture full dome panoramas in as little as three minutes. And it offers varying levels of imaging capabilities and resolutions, whether you're documenting your site, or capturing additional visual detail on your DR observations.

Get the Most Out of Your Field Data With TBC.

Back in the office Trimble Business Center lets you fully integrate Trimble SX10 data into your projects using the familiar workflows of the market leading survey office software. Enhanced point cloud management, automated extraction and interoperability to leading CAD and GIS packages ensures that you can satisfy even your toughest client demands.

Unparalleled Precision. Unrivalled Performance.

The Trimble SX10 scanning total station sets a new standard for accuracy, capability and performance. Whether you're performing a typical job or your most challenging survey projects, the SX10 gives you the confidence to do it all and do it well.

Key Features

- ▶ Combines surveying, imaging and high speed 3D scanning in one revolutionary solution
- ▶ Trimble's Lightning 3DM enables both high-accuracy total station measurements and high-speed scanning capability
- ▶ Scanning speeds of up to 26,600 Hz at ranges up to 600 m and the smallest spot size in the industry—a mere 14 mm at 100 m
- ▶ Improved Trimble VISION technology allows for fast and easy capture of high resolution site imagery
- ▶ Complete integration with familiar workflows of Trimble Access and Trimble Business Center Software
- ▶ Faster target identification in dark or harsh environments with Target Illumination Light - TIL



| SURVEY PERFORMANCE | | |
|--|--|---|
| ANGLE MEASUREMENT | | |
| | Sensor type | Absolute encoder with diametrical reading |
| | Angle measurement accuracy ¹ | 1" (0.3 mgon) |
| | Angle display (least count) | 0.1" (0.01 mgon) |
| AUTOMATIC LEVEL COMPENSATOR | | |
| | Type | Centered dual-axis |
| | Accuracy | 0.5" (0.15 mgon) |
| | Range | ±5.4' (±100 mgon) |
| | Electronic 2-axis level, with a resolution of | 0.3" (0.1 mgon) |
| | Circular level in tribrach | 8/2 mm |
| DISTANCE MEASUREMENT | | |
| Accuracy | | |
| Prism mode | Standard ² | 1 mm + 1.5 ppm |
| | Tracking ^{2,3} | 2 mm + 1.5 ppm |
| DR mode | Standard ² | 2 mm + 1.5 ppm |
| Measuring time | | |
| Prism mode | Standard | 1.6 s |
| DR mode | Standard | 1.2 s |
| Range | | |
| Prism mode ⁴ | 1 prism | 1 m – 5,500 m |
| DR mode | Kodak White Card (Catalog number E1527795) | 1 m – 800 m |
| | Kodak Grey Card (Catalog number E1527795) | 1 m – 450 m |
| Autolock and Robotic Range | | |
| | Autolock range - traverse 50 mm ⁵ | 1 m – 800 m |
| | Autolock range - 360 prism | 1 m – 300 m ⁶ / 700 m ⁵ |
| | Angle accuracy ¹ | 1" |
| SCANNING PERFORMANCE | | |
| GENERAL SCANNING SPECIFICATIONS | | |
| | Scanning principle | Band scanning using rotating prism in telescope |
| | Measurement rate | 26.6 kHz |
| | Point spacing | 6.25 mm, 12.5 mm, 25 mm or 50 mm @ 50 m |
| | Field-of-view | 360° x 300° |
| | Coarse scan; full dome - 360° x 300° (horizontal angle x vertical angle) Density: 1 mrad, 50 mm spacing @ 50 m | Scan time: 12 minutes |
| | Standard scan; area scan - 90° x 45° (horizontal angle x vertical angle) Density: 0.5 mrad, 25 mm spacing @ 50 m | Scan time: 6 minutes |
| RANGE MEASUREMENT | | |
| | Range principle | Ultra-high speed time-of-flight powered by Trimble Lightning technology |
| Range | | |
| | Kodak White Card (Catalog number E1527795) | 0.9 m – 600 m |
| | Kodak Gray Card (Catalog number E1527795) | 0.9 m – 350 m |
| Range noise | | |
| | @ 50 m on 18–90% reflectivity | 1.5 mm |
| | @ 120 m on 18–90% reflectivity | 1.5 mm |
| | @ 200m on 18-90% reflectivity | 1.5mm |
| | @ 300m on 18-90% reflectivity | 2.5mm |
| Scanning Accuracy | | |
| | Scanning Angular Accuracy | 5" (1.5mgon) |
| | 3D position Accuracy @ 100m ⁸ | 2.5mm |

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| EDM SPECIFICATIONS | | |
|--------------------------------------|---|--|
| | Light source | Pulsed laser 1550 nm; Laser class 1M |
| | Beam divergence DR mode | 0.2 mrad |
| | Laser spot size at 100 m (FWHM) | 14 mm |
| | Atmospheric correction | Available through field and office software |
| IMAGING PERFORMANCE | | |
| | Imaging principle | 3 calibrated cameras in telescope powered by Trimble VISION technology |
| | Cameras total field of view | 360° x 300° |
| | Live view frame rate (depending on connection) | Up to 15 fps |
| | File size of one total panorama with overview camera | 15 MB – 35 MB |
| Panorama measurement time/resolution | | |
| Overview panorama | Full dome 360° x 300° (Horizontal angle x vertical angle) with 10% overlap | 3 minutes, 40 images, 20 mm @ 50 m per pixel |
| Primary panorama | Area capture 90° x 45° (Horizontal angle x vertical angle) with 10 % overlap | 3 minutes, 48 images, 4.4 mm @ 50 m per pixel |
| CAMERAS SPECIFICATIONS | | |
| General Camera Specifications | | |
| | Resolution of each camera chip | 5 MP (2592 x 1944 pix) |
| | File format of images | .jpeg |
| | Field of view max | 57.5° (horizontal) x 43.0° (vertical) |
| | Field of view min | 0.65° (horizontal) x 0.5° (vertical) |
| | Total zoom (no interpolation) | 84 x |
| | 35 mm equivalent focal length | 36–3000 mm |
| | Exposure modes | Auto, spot exposure |
| | Manual exposure brightness | ±5 steps |
| | White balance modes | Auto, daylight, incandescent, overcast |
| | Temperature compensated optics | Yes |
| | Calibrated cameras | Yes |
| Overview Camera | | |
| | Position | Parallel to measurement axis |
| | One pixel corresponds to | 20 mm @ 50 m |
| Primary Camera | | |
| | Position | Parallel to measurement axis |
| | One pixel corresponds to | 4.4 mm @ 50 m |
| Telescope Camera | | |
| | Position | Coaxial |
| | Focusing | Automatic, manual |
| | Focusing distance | 1.7 m to infinity |
| | One pixel corresponds to | 0.88 mm @ 50 m |
| | Pointing precision (std dev 1 sigma) | 1" (HA: 1.5 cc, VA: 2.7 cc) |
| Plummet Camera | | |
| | Usable range | 1.0–2.5 m |
| | Resolution on ground - one pixel corresponds to | 0.2 mm @ 1.55 m instrument height |
| | Accuracy | 0.5 mm @ 1.55 m instrument height |
| GENERAL SPECIFICATIONS | | |
| | Communication | WiFi, 2.4 Ghz Spread Spectrum, cabled (USB 2.0) |
| | IP-rating | IP55 |
| | Operating temperature range | –20 °C to 50 °C |
| | Security | Dual layer password protection |

Trimble SX10 SCANNING TOTAL STATION

SYSTEM SPECIFICATIONS

SERVO SYSTEM

| | | |
|--|---------------------------|--|
| | MagDrive servo technology | Integrated servo/angle sensor electromagnetic direct drive |
| | Clamps and slow motions | Servo-driven |

CENTERING

| | | |
|--|------------------|--|
| | Centering system | Trimble 3-pin |
| | Plummets | Built-in video plummet |
| | | Split optics tribrach with optical plummet |

POWER SUPPLY

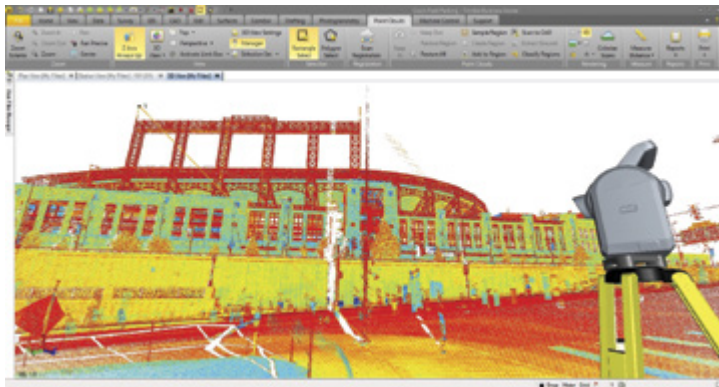
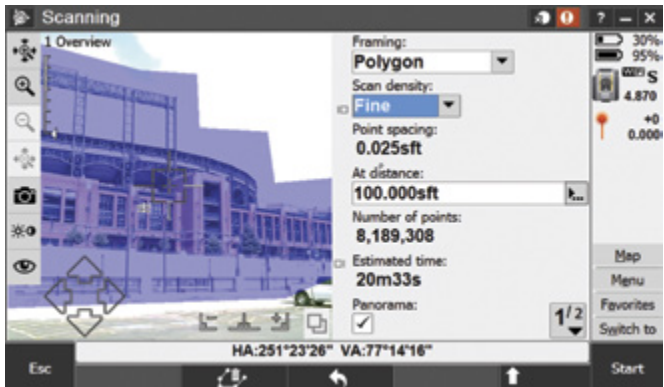
| | | |
|--|------------------|--|
| | Internal battery | Rechargeable Li-Ion battery 11.1 V, 6.5 Ah |
|--|------------------|--|

Operating time⁷

| | | |
|--|---|-------------------|
| | One internal battery | Approx. 2–3 hours |
| | Three internal batteries in multi-battery adapter | Approx. 6–9 hours |

WEIGHT AND DIMENSIONS

| | | |
|--|----------------------|---------|
| | Instrument | 7.5 kg |
| | Tribrach | 0.7 kg |
| | Internal battery | 0.35 kg |
| | Trunnion axis height | 196 mm |
| | Front lens aperture | 56 mm |



- 1 Standard deviation according to ISO17123-3.
- 2 Standard deviation according to ISO17123-4.
- 3 Single measurement, target static.
- 4 Standard clear conditions (No haze, Overcast or moderate sunlight with very light heat shimmer, visibility about 10 km).
- 5 Under perfect conditions (Overcast, visibility about 40 km, no heat shimmer).
- 6 Normal conditions (Moderate sunlight, visibility about 10 km, some heat shimmer).
- 7 The capacity in -20 °C is 75% of the capacity at +20 °C.
- 8 Standard deviation of fitted position of a sphere target.

Specifications subject to change without notice.



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